Claims

[c1] 1. A method of forming a coating, comprising:
(a) providing a substrate having surface;
(b) forming a layer of water on said surface; and
(c) forming a layer of a material on said layer of water.

[c2] 2. The method of claim 1, wherein step (b) includes spinning water on said surface.

[c3] 3. The method of claim 1, wherein step (b) includes forming a globule of water on said surface followed by spinning said substrate.

[c4] 4. The method of claim 1, wherein step (b) includes forming a globule of water on said while spinning said substrate.

[c5] 5. The method of claim 1, wherein step (b) includes dispensing water on said surface while said substrate is spinning at a first speed to form a globule of water on said surface in the center of said substrate followed by spinning said substrate at a second speed after said globule of water has been formed to form said layer of water, said second speed higher than said first speed.

[c6] 6. The method of claim 5, wherein during said spinning at said first speed and said spinning at said second speed, said substrate is spinning about an axis substantially perpendicular to said hydrophobic surface and running through the center of said substrate.

[c7] 7. The method of claim 1, wherein said layer of water is substantially uniform across said surface.

[c8] 8. The method of claim 1, wherein said layer of layer modifies the interfacial surface tension characteristics between said surface and said material in a manner to decrease the degree of hydophobicity of said surface.

[c9] 9. The method of claim 1, wherein step (c) includes spinning said substrate while dispersing said material on to said layer of water.

[c10] 10. The method of claim 1, wherein said material as applied includes a substantial amount of water.

[c11] 11. A method of forming an anti-reflective coating on a top surface of a photoresist layer, comprising in the order recited:
(a) providing a substrate;
(b) forming said layer of photoresist on said substrate;
(c) spinning a layer of water on said top surface of said photoresist layer; and

(d) spinning a layer of anti-reflective material on said layer of water to form said anti-reflective coating on said surface.

[c12] 12. The method of claim 11, wherein step (c) wets said top surface of said photoresist layer with water and step (d) is performed while said top surface of said photoresist layer is still wet with water.

[c13] 13. The method of claim 11, wherein step (c) includes forming a globule of water on said top surface of said photoresist layer followed by spinning said substrate to form said layer of water, said layer of water having a uniform thickness across said top surface of said photoresist layer.

[c14] 14. The method of claim 11, wherein step (b) includes forming a globule of water on said while spinning said substrate.

[c15] 15. The method of claim 11, wherein step (c) includes dispensing water on said top surface of said photoresist layer while said substrate is spinning at a first speed to form a globule of water on said top surface of said photoresist layer in the center of said substrate followed by spinning said substrate at a second speed after said globule of water has been formed in order to form said

layer of water, said second speed higher than said first speed.

[c16] 16. The method of claim 15, wherein during said spinning at said low speed and said spinning at said high speed, said substrate is spinning about an axis substantially perpendicular to said hydrophobic surface and running through the center of said substrate.

[c17] 17.The method of claim 11, wherein step (d) includes dispensing said anti-reflective material on said top surface of said photoresist layer while said substrate is spinning.

[c18] 18. The method of claim 11, wherein said layer of water modifies the interfacial surface tension characteristics between said top surface of said photoresist layer and said anti-reflective material.

[c19] 19. The method of claim 11, wherein said anti-reflective material as applied includes a substantial amount of water.

[c20] 20. The method of claim 11, wherein a volume of anti-reflective material dispensed onto said top surface of said photo resist layer during step (d) is substantially less than a volume of anti-reflective material that would otherwise be dispensed onto said top surface of said

photo resist layer if step (c) is not performed in order to produce essentially the same thickness of said anti-reflective coating.

[c21] 21. A method of forming an anti-reflective coating on a top surface of a photoresist layer, comprising in the order recited:
(a) providing a semiconductor substrate;
(b) forming said layer of photoresist on said substrate;
(c) spinning a layer of water of substantially uniform thickness on said top surface of said photoresist layer; and
(d) spinning a layer of anti-reflective material on said layer of water to form said anti-reflective coating on said surface.

[c22] 22. The method of claim 21, wherein step (c) wets said top surface of said photoresist layer with water and step (d) is performed while said top surface of said photoresist layer is still wet with water.

[c23] 23. The method of claim 21, wherein step (c) includes forming a globule of water on said while said semiconductor substrate is spinning at about 5 to 50 rpm.

[c24] 24. The method of claim 21, wherein step (c) includes dispensing 2 to 20 milliliters of water to form a globule

of water on said top surface of said photoresist layer followed by spinning said semiconductor substrate at about 500 to 2000 rpm for about 0.3 to 5.0 seconds to form said layer of water across said top surface of said photoresist layer.

[c25] 25. The method of claim 21, wherein step (c) includes dispensing about 2 to 20 milliliters of water on said top surface of said photoresist layer while said semiconductor substrate is spinning at about 5 to 50 rpm to form a globule of water on said top surface of said photoresist layer followed by spinning said semiconductor substrate at about 500 to 2000 rpm after said globule of water has been to formed in order to form said layer of water across said top surface of said photoresist layer.

[c26] 26. The method of claim 21, wherein step (d) includes dispensing said anti-reflective material on said top surface of said photoresist layer within about 0 to 5 seconds of the completion of step (c).

[c27] 27.The method of claim 21, wherein step (d) includes dispensing said anti-reflective material on said top surface of said photoresist layer while said semiconductor substrate is spinning at about 2000 to 5000 rpm.

[c28] 28. The method of claim 21, wherein said water layer

modifies the interfacial surface tension characteristics between said top surface of said photoresist layer and said anti-reflective material in a manner to decrease the degree of hydophobicity of said top surface of said photoresist layer.

[c29] 29. The method of claim 21, wherein said anti-reflective material as applied includes a substantial amount of water.

[c30] 30. The method of claim 21, wherein a volume of anti-reflective material dispensed onto said top surface of said photo resist layer during step (d) is less than about 4 milliliters.

[c31] 31. The method of claim 21, wherein a volume of anti-reflective material dispensed onto said top surface of said photo resist layer during step (d) is between about 2 milliliters and 0.15 milliliters.

[c32] 32. The method of claim 21, wherein said semiconductor substrate has a diameter selected from the group of diameters consisting of a 100 millimeter diameter, a 125 diameter millimeter, a 200 millimeter diameter and a 300 millimeter diameter.

[c33] 33. The method of claim 21 further including:
e) exposing said photoresist layer to light and develop-

ing the exposed photoresist layer in order to form photoresist images on said semiconductor substrate.